

Rocky Mountains

The Rocky Mountains, the major mountain system of North America, are part of the great cordillera extending through the western regions of both North and South America. They extend for about 4,890 km (3,000 mi) in a north-south orientation from northern Alberta, Canada, to central New Mexico. The width of this region varies from 120 to 645 km (75 to 400 mi). Elevation varies from approximately 1,525 m (5,000 ft) to 4,399 m (14,432 ft) at Mount Elbert, Colo.

The Rockies received their name from explorers during the early 19th century because of the mountains' rugged topography. The mountains have long been a barrier to transportation, and settlements initially emerged in a linear pattern in the adjacent plains. The discovery (1858) of gold, and later of other minerals, was the major catalyst to economic development in the area. Today thousands of people visit the area's many national parks, monuments, and summer and winter sports resorts.

Topography and Geology

The Rockies are high, rugged, young mountains. The present landscape is the product of regional uplift during the late Cretaceous Period (100 million-65 million years ago) and subsequent etching by weathering and erosion. These mountains may be divided into four provinces: the southern Rockies, Wyoming Basin, middle Rockies, and northern Rockies.

The major mountain groups making up the southern Rockies are the Elk, Front, Gore, Jemez, Laramie, Park, Sangre de Cristo, and Sawatch ranges and the San Juan and Wet mountains. The southern Rockies extend from western New Mexico up through west central Colorado and into southern Wyoming. These ranges are the highest of the Rockies; Mount ELBERT (4,399 m/14,432 ft) in the Sawatch Range of Colorado is the entire system's highest peak. The southern Rockies are made up of parallel uplifts trending generally north to south. Precambrian (3,980 million-600 million years ago) igneous and metamorphic rocks compose the core of these uplifts, and younger sedimentary rocks lie along the margins. The San Juan Mountains, made up primarily of volcanic rocks from the Tertiary Period (65 million-12 million years ago), are the exception to this pattern.

The Wyoming Basin, with topography similar to that of the GREAT PLAINS, is located mostly in southwestern Wyoming and northwestern Colorado. Mountains are buried beneath the relatively flat terrain, probably representing severe erosion and filling of intermontane basins. The rocks are layered within a Precambrian core and include Paleozoic, Mesozoic (70 million-35 million years ago), and Tertiary formation.

The middle Rockies divide into eastern and western segments. The eastern part includes the Beartooth, Bighorn, Laramie, and Wind River mountains, located in western Wyoming. These mountains are structural upwarps, with Precambrian rock cores and Paleozoic and Mesozoic rocks along the flanks. The western part of the middle Rockies includes the TETON, WASATCH, Gros Ventre, Owl Creed, Snake, and Vinta ranges in northern Utah, southwestern Wyoming, and southeastern Idaho. They are composed of folded and faulted rocks of Paleozoic and Mesozoic age with an occasional granitic intrusion.

The northern Rockies are located in Canada (in British Columbia and western Alberta) and in the United States (in northwestern Montana and the northern tip of Idaho). The Canadian part of the northern Rockies, usually called the Canadian Rockies, includes the Cariboo and Selkirk mountains; the Bitterroot, Clearwater, and Salmon River mountains lie mostly south of the border, in the United States. The northern Rockies are composed of Precambrian, Paleozoic, and Mesozoic sedimentary rocks with large areas of granitic intrusions and lava flows. Thrust faulting of the sedimentary rocks is a major mountain-forming process in this province.

Glaciation during the Pleistocene Epoch (2.5 million-70,000 years ago) played a major role in producing the present Rocky Mountain landscape. The peaks of all provinces illustrate classic examples of glacial erosion and deposition features. In addition, steep hillslopes, intense thunderstorms accompanied by copious precipitation, and recently exploitive activities of clear-cut lumbering and livestock overgrazing have subjected the geologic structures to intense soil erosion.

Environment

The Rockies are an oasis between the desert to the west and the plains to the east. Vegetation and soils are affected by the cooling of air masses as the elevation increases, and precipitation also increases with elevation. Latitude also influences the climate. In most of the Rockies five vegetation zones are often recognized. At

Rocky Mountains

The Rocky Mountains, the major mountain system of North America, are part of the great cordillera extending through the western regions of both North and South America. They extend for about 4,800 km (3,000 mi) in a north-south direction from northern Alberta, Canada, to central New Mexico. The width of this region varies from 130 to 642 km (75 to 400 mi). Elevation varies from approximately 1,525 m (5,000 ft) to 4,397 m (14,457 ft) at Mount Elbert, Colo.

The Rockies received their name from explorers during the early 19th century because of the mountain's rugged topography. The mountains have long been a barrier to transportation, and settlement initially emerged in a broad belt in the adjacent plains. The discovery of gold and later of other minerals, was the major catalyst to settlement development in the area. Today thousands of people visit the area's many national parks, monuments, and scenery and winter sports resorts.

Topography and Geology

The Rockies are high, rugged, young mountains. The present landscape is the product of regional uplift during the late Cretaceous Epoch (100 million-65 million years ago) and subsequent folding by weathering and erosion. These mountains may be divided into four provinces: the northern Rockies, the southern Rockies, the Wind River and Teton Rockies, and the middle Rockies.

The major mountain groups making up the northern Rockies are the Elk, Front, Gros Ventre, Laramie, and Wind River ranges. The southern Rockies extend from the Colorado Plateau in the southwest to the Gulf of Mexico in the east. The highest peaks are in the Wind River and Teton ranges. The Wind River range is the highest of the Rockies. Mount ELBERT (4,397 m (14,457 ft)) in the Sawatch Range of Colorado is the entire system's highest peak. The southern Rockies are made up of parallel ridges trending generally north to south. Precambrian (2,500 million-500 million years ago) igneous and metamorphic rocks composed the core of these uplifts, and younger sedimentary rocks lie along the margins. The Gros Ventre Mountains, made up primarily of volcanic rocks from the Tertiary Period (65 million-12 million years ago), are the exception to this pattern.

The Wyoming Basin, with topography similar to that of the GREAT PLAINS, is located mostly in southwestern Wyoming and northwestern Colorado. Mountains are buried beneath the relatively flat terrain, probably representing severe erosion and filling of mountainous basins. The rocks are layered with a Permian sandstone core and include Paleozoic, Mesozoic (70 million-65 million years ago), and Tertiary formations.

The middle Rockies divide into eastern and western segments. The eastern part includes the Beartooth, Bighorn, and Wind River mountains, located in western Wyoming. These mountains are structural upwarps, with Precambrian rock cores and Paleozoic and Mesozoic rocks along the flanks. The western part of the middle Rockies includes the TETON, WYATCH, Gros Ventre, Owl Creek, Snake, and Wind ranges in northern Utah, northeastern Wyoming, and southeastern Idaho. They are composed of folded and faulted rocks of Paleozoic and Mesozoic age with an occasional granite intrusion.

The northern Rockies are located in Canada (in British Columbia and western Alberta) and in the United States (in northwestern Montana and the northern tip of Idaho). The Canadian part of the northern Rockies, usually called the Canadian Rockies, includes the Canadian and Selkirk mountains, the Elkhead, Clearwater, and Salmon River mountains. The northern Rockies are composed of Precambrian, Paleozoic, and Mesozoic sedimentary rocks with large masses of granite intrusions and lava flows. Thrust faulting of the sedimentary rocks is a major mountain-forming process in this province.

Glaciation during the Pleistocene Epoch (2.5 million-10,000 years ago) played a major role in producing the present Rocky Mountain landscape. The peaks of all provinces illustrate classic examples of glacial erosion and deposition features. In addition, steep hillslopes, intense thunderstorms accompanied by copious precipitation, and recently explosive activities of clear-cut lumbering and livestock overgrazing have subjected the geologic structures to intense soil erosion.

Environment

The Rockies are an oasis between the desert to the west and the plain to the east. Vegetation and climate are affected by the cooling of air masses as the elevation increases, and precipitation also increases with elevation. Latitude also influences the climate. In most of the Rockies the vegetation zones are often recognized as

elevations below 1,645 m (5,400 ft), plains with associated grasses are common. On the foothills (elevations to 2,135 m/7,000 ft), sagebrush, juniper, and pinon grow. Montane vegetation—ponderosa pine, Douglas fir, lodgepole pine, and aspen—prevails up to 2,750 m (9,000 ft). In the subalpine zone (to 3,500 m/11,500 ft), englemann spruce, lodgepole pine, and aspen grow. Above 3,500 m (11,500 ft) alpine flowers and grasses are found. Soils range from desert types to poorly developed, rocky soils at higher elevations and on steep slopes. Fauna includes ROCKY MOUNTAIN GOATS; bighorn sheep; black, brown, and grizzly bear; coyotes; lynx; and wolverines.

The CONTINENTAL DIVIDE winds through the Rockies, bifurcating drainage; to the east of the divide rivers flow to the Gulf of Mexico, and the rivers of the western slopes drain toward the Pacific Ocean. The Colorado, Columbia, Green, Salmon, San Juan, and Snake rivers flow westward; the Arkansas, Missouri, North and South Platte, and Yellowstone rivers flow eastward. Runoff and meltwater from the snow-covered peaks supplying these rivers and lakes provide the water supply for one-quarter of the United States and support the economic development of the region. The lakes and reservoirs of the Rockies store water for municipal supplies, irrigation, flood control, recreation, and hydroelectric power generation.

ECONOMIC AND CULTURAL GEOGRAPHY

Economic development centers on mining, forestry, agriculture, recreation, and the service industries that support the other economic activity. A wide variety of metallic minerals is found in the Rockies, including significant deposits of copper, gold, lead, molybdenum, silver, tungsten, and zinc. The Wyoming basin and several smaller areas contain significant reserves of coal, natural gas, oil-shale, and petroleum. Forestry is a major industry in the Rocky Mountain region. Agriculture includes dry-land and irrigated farming, plus livestock grazing. Cool temperatures and poor soils limit farming at the higher elevations, and livestock are frequently moved between summer and winter pastures. The scenic splendor and recreational opportunities draw hundreds of thousands of tourists to the Rockies annually. National parks (including GLACIER, GRAND TETON, YELLOWSTONE, and Rocky Mountain national parks in the United States and Jasper, Waterton Lakes, and Yoho national parks in Canada), forests, resorts (such as ASPEN, Colo., and BANFF, Alberta), and vacation ranches attract an international clientele.

The Rockies are sparsely populated; probably less than a million permanent residents live there. There are two types of settlements: isolated, dispersed farmsteads or ranches, and towns and villages. The latter category includes resort towns and mining towns, both of which have been characterized by rapid growth during recent years.

Terrence J. Toy

Bibliography: American West Staff, *The Magnificent Rockies* (1973); Armstrong, David, *Rocky Mountain Mammals*, rev. ed. (1987); Athearn, Robert G., *High Country Empire: The High Plains and Rockies* (1965); Benedict, Audrey D., *A Sierra Club Naturalists's Guide to the Southern Rockies* (1991); Buchert, M., and Sandford, R., *Panorama of the Canadian Rockies* (1987); Eberhart, Perry, and Schmuck, Philip, *The Fourteeners: Colorado's Great Mountains* (1970); Johnston, T. Edgar, *Fauna of the Rockies*, ed. by Elizabeth Anderson (1977); Lavender, David S., *The Rockies*, rev. ed. (1975; repr. 1981); Mills, Enos, *Wild Life on the Rockies* (1988) and *The Spirit of the Rockies* (1989); Sprague, Marshall, *The Great Gates: The Story of the Rocky Mountain Passes* (1964); Walker, Bryce S., *The Great Divide* (1973).

